



# SEQUENCE LISTING

<110> YEH, EDWARD T.H.

<120> USES FOR A NOVEL CELL-DEATH-PROTECTING PROTEIN

<130> UTSH:248US

<140> 09/484,964

<141> 2000-01-18

<150> 08/964,162

<151> 1997-11-04

<150> 60/030,302

<151> 1996-11-05

<160> 18

<170> PatentIn Ver. 2.0

<210> 1

<211> 1465

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (88)..(390)

<400> 1

cggggaaggat ttgtaaaccc cggagcggagg ttctgcttac cggaggccgc tgctgtgcgg 60  
agacccccgg gtgaagccac cgtcatc atg tct gac cag gag gca aaa cct tca 114

Met Ser Asp Gln Glu Ala Lys Pro Ser

1

5

act gag gac ttg ggg gat aag aag caa ggt gaa tat att aaa ctc aaa 162  
Thr Glu Asp Leu Gly Asp Lys Lys Gln Gly Glu Tyr Ile Lys Leu Lys  
10 15 20 25

gtc att gga cag gat agc agt gag att cac ttc aaa gtg aaa atg aca 210  
Val Ile Gly Gln Asp Ser Ser Glu Ile His Phe Lys Val Lys Met Thr  
30 35 40

aca cat ctc aag aaa ctc aaa gaa tca tac tgt caa aga cag ggt gtt 258  
Thr His Leu Lys Lys Leu Lys Glu Ser Tyr Cys Gln Arg Gln Gly Val  
45 50 55

cca atg aat tca ctc agg ttt ctc ttt gag ggt cag aga att gct gat 306  
Pro Met Asn Ser Leu Arg Phe Leu Phe Glu Gly Gln Arg Ile Ala Asp  
60 65 70

aat cat act cca aaa gaa ctg gga atg gag gaa gaa gat gtg att gaa 354  
Asn His Thr Pro Lys Glu Leu Gly Met Glu Glu Glu Asp Val Ile Glu  
75 80 85

gtt tat cag gaa caa acg ggg ggt cat tca aca gtt tagatattct 400  
Val Tyr Gln Glu Gln Thr Gly Gly His Ser Thr Val  
90 95 100

ttttattttt tttcttttcc ctcaatcctt ttttattttt aaaaatagtt cttttgtaat 460

gtgggtgttca aaacggaatt gaaaactggc accccatctc tttgaaacat ctggtaattt 520

gaattctagt gctcattatt cattattgtt tgttttcatt gtgctgattt ttgggtgatca 580

agcctcagtc cccttcatat taccctctcc tttttaaaaa ttacgtgtgc acagagagggt 640

cacctttttc aggacattgc attttcaggc ttgtgggtgat aaataagatc gaccaatgca 700

```

agtgttcata atgactttcc aattggccct gatgttcagc atgtgattac ttcactcctg 760
gactgtgact ttcagtggga gatggaagtt tttcagagaa ctgaactgtg gaaaaatgac 820
ctttccttaa cttgaagcta cttttaaaat ttgaggggtct ggaccaaag aagaggaata 880
tcagggtgaa gtcaagatga cagataaggt gagagtaatg actaactcca aagatggctt 940
cactgaagaa aaggcatttt aagatttttt aaaaatcttg tcagaagatc ccagaaaagt 1000
tctaattttc attagcaatt aataaagcta tacatgcaga aatgaatata acagaacact 1060
gctcttttta gattttatct gtactttttg gcctgggata tgggttttaa atggacattg 1120
tctgtaccag cttcattaaa ataaacaata tttgtcaaaa atcgtactaa tgcttatttt 1180
attttaattg tatagaaaga aaaaaatgcc taaaataagg ttttcttgca taaatactgg 1240
aaattgcaca tggtagaaat tttttcttca ttactgtaca gggatgatgt taatgacttt 1300
ggagcactga aagttaactga agtgccttct gaatcaagga ttttaattaag gccacaatac 1360
ctttttaata ctcagtgttc tgtttttttt aaaaacttga tattcccgta tgggtgcatat 1420
ttgatacagg tacccaatca tgttgataaa atgggcatgc cagcc 1465

```

```

<210> 2
<211> 101
<212> PRT
<213> Homo sapiens

```

```

<400> 2
Met Ser Asp Gln Glu Ala Lys Pro Ser Thr Glu Asp Leu Gly Asp Lys
 1          5          10          15
Lys Gln Gly Glu Tyr Ile Lys Leu Lys Val Ile Gly Gln Asp Ser Ser
 20          25          30
Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu Lys Lys Leu Lys
 35          40          45
Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn Ser Leu Arg Phe
 50          55          60
Leu Phe Glu Gly Gln Arg Ile Ala Asp Asn His Thr Pro Lys Glu Leu
 65          70          75          80
Gly Met Glu Glu Glu Asp Val Ile Glu Val Tyr Gln Glu Gln Thr Gly
 85          90          95
Gly His Ser Thr Val
100

```

```

<210> 3
<211> 774
<212> DNA
<213> Homo sapiens
<220>
<221> modified_base
<222> (53)
<223> Y = C or T
<220>
<221> modified_base
<222> (689)
<223> N = A, C, G or T
<220>
<221> modified_base
<222> (739)
<223> N = A, C, G or T
<220>
<221> modified_base
<222> (744)
<223> N = A, C, G or T

```

```

<400> 3

```

```

cggcacgagg gtgctgcttg tgtgctcggt tgggtcggac ctggtacctc ttyttgtgaa 60
gcggcagctg aggagactcc ggcgctcgcc atggccgacg aaaagcccaa ggaaggagtc 120
aagactgaga acaacgatca tattaatttg aagggtggcg ggccaggatgg ttctgtgggtg 180
cagtttaaga ttaagaggca tacaccactt agtaaactaa tgaaagccta ttgtgaacga 240
cagggattgt caatgaggca gatcagattc cgatttgacg ggcaaccaat caatgaaaca 300
gacacacctg cacagttgga aatggaggat gaagatacaa ttgatgtgtt ccaacagcag 360
acgggagggtg tctactgaaa agggaacctg cttctttact ccagaactct gttcttttaa 420
gaccaagatt acattctcaa ttagaaaact gcaatttggt tccaccacat cctgactact 480
accgtatagt tttctctatt ctttcatttc ccccttcccc attcctttat tgtacataaa 540
gtaactggta tatgtgcaca agcatattgc attttttttt tttttaacta aacagccaat 600
gggtatgtttt gattgacatc caagtggaga cggggatggg gaaaaatact gattctgtgg 660
aaaatacccc cctttctccc attagtggnc atgctccatt cagcccttaa acctttataa 720
tcccaggtaa ggtaatttng ccncaccgg ttttacccaa aaaaaaaaaa actt 774

```

<210> 4

<211> 95

<212> PRT

<213> Homo sapiens

<400> 4

```

Met Ala Asp Glu Lys Pro Lys Glu Gly Val Lys Thr Glu Asn Asn Asp
 1             5             10             15
His Ile Asn Leu Lys Val Ala Gly Gln Asp Gly Ser Val Val Gln Phe
      20             25             30
Lys Ile Lys Arg His Thr Pro Leu Ser Lys Leu Met Lys Ala Tyr Cys
      35             40             45
Glu Arg Gln Gly Leu Ser Met Arg Gln Ile Arg Phe Arg Phe Asp Gly
      50             55             60
Gln Pro Ile Asn Glu Thr Asp Thr Pro Ala Gln Leu Glu Met Glu Asp
      65             70             75             80
Glu Asp Thr Ile Asp Val Phe Gln Gln Gln Thr Gly Gly Val Tyr
      85             90             95

```

<210> 5

<211> 1733

<212> DNA

<213> Homo sapiens

<220>

<221> modified\_base

<222> (19)

<223> N = A, C, G or T

<400> 5

```

ttcggcacag gcgggaganc ggcggggccg aagcgtgaac tcgcccgtc cggtttgctt 60
ccccgcgcc gcctccccgc gccgctcgga agccatgtcc gaggagaagc ccaaggaggg 120
tgtgaagaca gagaatgacc acatcaacct gaagggtggc ggccaggacg gctccgtggg 180
gcagttcaag atcaagaggc acacgtcgct gagcaagctg atgaaggcct actgcgagag 240
gcagggcttg tcaatgaggc agatcagatt caggttcgac gggcagccaa tcaatgaaac 300
tgacactcca gcacagctga gaatggagga cgaggacacc atcgacgtgt tccagcagca 360
gacgggagggt gtgccggaga gcagcctggc agggcacagt ttctagaggg cccgtcccca 420
gcccggggccg tccatcctcg cattgctgtt gaatggtgag cacgtgacca tgccgaccac 480
aaagggtgtc gcggaaactc gaggacattc accacgatga ttttcctctc tttgatgtac 540
ttcaagtgca actcaaaact atatctgcag ggatgaatct gtaacttaaa ttgggccaat 600
cagaattgtt atctttgttc aggtaaaatg agttgcaaga tattgtgggt acttttgtgt 660
gctcatttgt gttttcccc ctcctacaa cattttttta accccaaaat tatagcctga 720
atgttcgctt ttagtctggc cagggatctg actcctgagt tggttgcctc tcccctgctc 780
actccagtca catagagaat tgggtgtttc cgcagtgggg attgcagctg ttggacaggt 840

```

```

attggggggca aggttggttag ggaggacaga ctgtcacttg ctgttacagg cacaggtgat 900
taaaatgcta aatattgcaa atttaagctt tgtcagtata tggaaaagtt gaagggaaaa 960
tactggaatg cttcttcaaa ggttaaaaaa taaccgagtc ttttggtaat ttgacccac 1020
gtgctctctg gccctcaagc atgtaacctc ggggtctgag gcccaggacc cccccctg 1080
ccaccctcc caccctactc cctgctcagt acctggcggt ggtacacagg caaggattgg 1140
cacaaccaa attggccttt ttctccctct taatattgaa gaaattccca catttctcat 1200
ttggtaatgg tgttggtggc tcagatttct tctagtattt gcttctgatg aatgattatg 1260
gtctatacat aaaaaagtaa gactaagtat tgctgaattt gcagttatgt tgtcgtgtat 1320
aagagctact tccaagtgtg gttacaaatg aacccatgga atgatgactt catgttcttc 1380
tcgtgggttt gtgccgtgct gctttccaaa taggtattga atttatgcat tagtctgggtg 1440
atttcagttc tgtgaaatat ttgggatct ataccaatta aacattttca tagttctgcc 1500
tattgtcctt cctgaggct ccattgctgc ttggtggcca ttctctgcct ttttacagtc 1560
acctgaacaa tgacccatca tctcttgctt gcttgaaatc ttgctgaaat gttctcattt 1620
cctgtttgct gtatgggctc ggggtgggatg tttgttggt ctggttggtt tattcaccaa 1680
tttgtacatt atttgttgtc ctttactact gtaaacagta aatatagttt ggt 1733

```

```

<210> 6
<211> 103
<212> PRT
<213> Homo sapiens

```

```

<400> 6
Met Ser Glu Glu Lys Pro Lys Glu Gly Val Lys Thr Glu Asn Asp His
  1          5          10          15
Ile Asn Leu Lys Val Ala Gly Gln Asp Gly Ser Val Val Gln Phe Lys
      20          25          30
Ile Lys Arg His Thr Ser Leu Ser Lys Leu Met Lys Ala Tyr Cys Glu
      35          40          45
Arg Gln Gly Leu Ser Met Arg Gln Ile Arg Phe Arg Phe Asp Gly Gln
      50          55          60
Pro Ile Asn Glu Thr Asp Thr Pro Ala Gln Leu Arg Met Glu Asp Glu
      65          70          75          80
Asp Thr Ile Asp Val Phe Gln Gln Gln Thr Gly Gly Val Pro Glu Ser
      85          90          95
Ser Leu Ala Gly His Ser Phe
      100

```

```

<210> 7
<211> 9
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      Peptide

```

```

<400> 7
Arg Gly Ser His His His His His
  1          5

```

```

<210> 8
<211> 30
<212> DNA
<213> Homo sapiens

```

```

<400> 8
cttaggatcc atggcctcgg aagacattgc

```

<210> 9  
<211> 30  
<212> DNA  
<213> Homo sapiens

<400> 9  
gtgtgaattc tagaccttgt acagcgtctg

30

<210> 10  
<211> 7  
<212> PRT  
<213> Artificial Sequence  
<220>  
<223> Description of Artificial Sequence: Synthetic  
Peptide

<400> 10  
Arg Gly Ser His His His His  
1 5

<210> 11  
<211> 9  
<212> PRT  
<213> Influenza virus

<400> 11  
Tyr Pro Tyr Asp Val Pro Asp Tyr Ala  
1 5

<210> 12  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 12  
His Ser Thr Val  
1

<210> 13  
<211> 101  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 13  
Met Ser Asp Ser Glu Val Asn Gln Glu Ala Lys Pro Glu Val Lys Pro  
1 5 10 15  
Glu Val Lys Pro Glu Thr His Ile Asn Leu Lys Val Ser Asp Gly Ser  
20 25 30  
Ser Glu Ile Phe Phe Lys Ile Lys Lys Thr Thr Pro Leu Arg Arg Leu  
35 40 45  
Met Glu Ala Phe Ala Lys Arg Gln Gly Lys Glu Met Asp Ser Leu Arg  
50 55 60  
Phe Leu Tyr Asp Gly Ile Arg Ile Gln Ala Asp Gln Thr Pro Glu Asp  
65 70 75 80  
Leu Asp Met Glu Asp Asn Asp Ile Ile Glu Ala His Arg Glu Gln Ile  
85 90 95

Gly Gly Ala Thr Tyr  
100

<210> 14  
<211> 80  
<212> PRT  
<213> Homo sapiens

<400> 14  
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu  
1 5 10 15  
Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp  
20 25 30  
Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys  
35 40 45  
Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu  
50 55 60  
Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly Gly Gly Leu Arg  
65 70 75 80

<210> 15  
<211> 76  
<212> PRT  
<213> Homo sapiens

<400> 15  
Met Leu Ile Lys Val Lys Thr Leu Thr Gly Lys Glu Ile Glu Ile Asp  
1 5 10 15  
Ile Glu Pro Thr Asp Lys Val Glu Arg Ile Lys Glu Arg Val Glu Glu  
20 25 30  
Lys Glu Gly Ile Pro Pro Gln Gln Gln Arg Leu Ile Tyr Ser Gly Lys  
35 40 45  
Gln Met Asn Asp Glu Lys Thr Ala Ala Asp Tyr Lys Ile Leu Gly Gly  
50 55 60  
Ser Val Leu His Leu Val Leu Ala Leu Arg Gly Gly  
65 70 75

<210> 16  
<211> 30  
<212> PRT  
<213> Homo sapiens

<400> 16  
Val Gln Asp Leu Ala Gln Leu Val Glu Glu Ala Thr Gly Val Pro Leu  
1 5 10 15  
Pro Phe Gln Lys Leu Ile Phe Lys Gly Lys Ser Leu Lys Glu  
20 25 30

<210> 17  
<211> 1518  
<212> DNA  
<213> Homo sapiens

<220>

<221> CDS,  
<222> (136) .. (438)

<400> 17

```
cgaggcgtag cggaagttac tgcagccgcg gtgttggtgct gtcgggaagg ggaaggattt 60
gtaaaccccg gagcgaggtt ctgcttacct gaggccgctg ctgtgcggag acccccgggt 120
gaagccaccg tcatac atg tct gac cag gag gca aaa cct tca act gag gac 171
      Met Ser Asp Gln Glu Ala Lys Pro Ser Thr Glu Asp
      1             5             10

ttg ggg gat aag aag caa ggt gaa tat att aaa ctc aaa gtc att gga 219
Leu Gly Asp Lys Lys Gln Gly Glu Tyr Ile Lys Leu Lys Val Ile Gly
      15             20             25

cag gat agc agt gag att cac ttc aaa gtg aaa atg aca aca cat ctc 267
Gln Asp Ser Ser Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu
      30             35             40

aag aaa ctc aaa gaa tca tac tgt caa aga cag ggt gtt cca atg aat 315
Lys Lys Leu Lys Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn
      45             50             55             60

tca ctc agg ttt ctc ttt gag ggt cag aga att gct gat aat cat act 363
Ser Leu Arg Phe Leu Phe Glu Gly Gln Arg Ile Ala Asp Asn His Thr
      65             70             75

cca aaa gaa ctg gga atg gag gaa gaa gat gtg att gaa gtt tat cag 411
Pro Lys Glu Leu Gly Met Glu Glu Glu Asp Val Ile Glu Val Tyr Gln
      80             85             90

gaa caa acg ggg ggt cat tca aca gtt tagatattct ttttattttt 458
Glu Gln Thr Gly Gly His Ser Thr Val
      95             100

tttctttttcc ctcaatcctt ttttattttt aaaaatagtt cttttgtaat gtgggtgttca 518
aaacggaatt gaaaactggc accccatctc tttgaaacat ctggtaattt gaattctagt 578
gtcattattt cattattggt tgttttcatt gtgctgattt ttggtgatca agcctcagtc 638
cccttcatat taccctctcc tttttaaaaa ttacgtgtgc acagagaggt cacctttttc 698
aggacattgc attttcaggc ttgtggtgat aaataagatc gaccaatgca agtggtcata 758
atgactttcc aattggccct gatgttctag catgtgatta cttcactcct ggactgtgac 818
tttcagtggg agatggaagt ttttcagaga actgaactgt ggaaaaatga cttttcctta 878
acttgaagct acttttaaaa ttttgagggt ctggaccaa aagaaggaa tatcagggtg 938
aagtcaagat gacagataag gtgagagtaa tgactaactc caaagatggc ttcactgaag 998
aaaaggcatt ttaagatttt ttaaaaatct tgtcagaaga tcccagaaaa gttctaattt 1058
tcattagcaa ttaataaagc tatacatgca gaaatgaata caacagaaca ctgctctttt 1118
```

tgattttatt tgtacttttt ggcctgggat atgggtttta aatggacatt gtctgtacca 1178  
 gcttcattaa aataaacaat atttgtcaaa aatcgtaata atgcttattt tattttaatt 1238  
 gtatagaaag aaaaaaatgc ctaaaataag gttttcttgc ataaatactg gaaattgcac 1298  
 atggtacaaa aaaaaaatgc ctaaattact gtacagggat gatgttaatg actttggagc 1358  
 actgaaagtt actgaagtgc cttctgaatc aaggatttaa ttaaggccac aatacctttt 1418  
 taatactcag tgttctgttt tttttaaaaa cttgatattc ccgtatgggtg catatttgat 1478  
 acaggtagcc aatcatgttg gataaatggg catgccagcc 1518

<210> 18  
 <211> 101  
 <212> PRT  
 <213> Homo sapiens

<400> 18  
 Met Ser Asp Gln Glu Ala Lys Pro Ser Thr Glu Asp Leu Gly Asp Lys  
 1 5 10 15  
 Lys Gln Gly Glu Tyr Ile Lys Leu Lys Val Ile Gly Gln Asp Ser Ser  
 20 25 30  
 Glu Ile His Phe Lys Val Lys Met Thr Thr His Leu Lys Lys Leu Lys  
 35 40 45  
 Glu Ser Tyr Cys Gln Arg Gln Gly Val Pro Met Asn Ser Leu Arg Phe  
 50 55 60  
 Leu Phe Glu Gly Gln Arg Ile Ala Asp Asn His Thr Pro Lys Glu Leu  
 65 70 75 80  
 Gly Met Glu Glu Glu Asp Val Ile Glu Val Tyr Gln Glu Gln Thr Gly  
 85 90 95  
 Gly His Ser Thr Val  
 100